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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,524	10/27/2003	Jonathan J. Morgan	117533	2232

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EXAMINER

PICKARD, ALISON K

ART UNIT	PAPER NUMBER
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3673

DATE MAILED: 11/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/693,524

Applicant(s)

MORGAN, JONATHAN J.

Examiner

Alison K. Pickard

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 11-22, 25, 26 and 28-30 is/are rejected.
- 7) ☒ Claim(s) 8-10, 23, 24 and 27 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 6, 7, 11-19, 22, 26, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Macks (2,964,339).

Macks discloses a sealing arrangement for sealing between parts in a turbine comprising a hydrodynamic sealing member (e.g. Fig. 9) having an upstream surface, downstream surface, radially outer surface, and radially inner surface. A resilient element (e.g. 64 or 80) is fixed to the seal member on the upstream surface (either side can be upstream, see col. 4, lines 23-24). During operation a clearance is created, which generates the hydrodynamic action, and the resilient element resists forces created by the fluid/pressures. A sealing device or sealing means (e.g. 72, see Fig. 10) is provided between the sealing member and housing, on a down stream portion. Figure 8 discloses the seal can have a groove 54, which would create a clearance at the upstream end that is larger than at the downstream end.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-5 and 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Macks in view of Gardner '493.

Although Macks discloses a groove (180 or 54), Macks does not appear to disclose plural grooves/channels. Gardner teaches a sealing arrangement comprising a hydrodynamic sealing member that is biased by a spring element to maintain a constant clearance. Gardner teaches the use of channels (e.g. figs. 15-17) to enhance the lift-off of the seal (see col. 8, line 52-col. 9, line 25). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to use plural grooves as taught by Gardner to improve the lift-off of the seal.

Regarding claim 3, Gardner does not appear to disclose the required depth of the channels. It is not considered inventive to discover the workable or optimum ranges by routine experimentation absent the showing of criticality for such ranges. See *In re Aller*, 105 USPQ 233, 235 (CCPA 1955). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to make the depth of the channels as required.

Regarding claims 28 and 29, Gardner also teaches coating the inner surface of the seal to reduce friction (col. 6, lines 15-24). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to coat the inner surface of the seal of Macks with a coating to reduce friction as taught by Gardner.

5. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Macks in view of Strub (3,756,673).

Macks does not disclose a passage from the upstream surface to the radially inner surface. Strub teaches a hydrodynamic sealing member with a resilient means 19. Strub teaches using a passage to supply pressure from the upstream side to between the seal and shaft to create

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the hydrodynamic film and center the seal on the shaft. Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to use the passage taught by Strub to supply pressure to the clearance in Macks to help create the hydrodynamic film and ensure the seal is centered.

6. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Macks.

Macks does not appear to disclose the material of the sealing means 72. The selection of a known material based on its suitability for its intended use is not considered inventive. See *In re Leshin*, 125 USPQ 416 (CCPA 1960). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to make the means from one of the claimed materials.

Allowable Subject Matter

7. Claims 8-10, 23, 24, and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

8. Applicant's arguments against Macks filed 8-31-06 have been fully considered but they are not persuasive.

The rejection of the claims over Macks has been maintained because Macks does disclose a resilient element that resists axial and radial forces. The rods resist axial forces because they are stiff in an axial direction, i.e. would prevent the seal from traveling axially. And the rods would resist radial forces to a degree. The claims do not require the radial forces to be completely resisted. In other words, the claims do not require the sealing member to be radially

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fixed. The rods of Macks are metal. Metal is resilient and inherently would resist forces to a degree. Considered another way, the rods would also resist a radial force to the degree that the rods connect the seal to a wall of the housing. Thus, the seal would (assuming *arguendo* the rods have absolutely no degree of resiliency) only be allowed to travel in a radial direction to the extent that the rod length would let it. Either way, a radial force would be resisted. Attention is also directed to Weiler and Baumann, which disclose similar sealing arrangements. These references also use rods that are axially stiff, yet resilient. Any of these rods would have to have a degree of resistance in order to maintain the clearance between the seal ring and shaft. If they didn't (as it appears Applicant is arguing) the seals would not function properly and the high pressure forces acting radially between the seal and shaft would expand the seal to a degree that a sealing clearance wasn't present.

Additionally, lines 64-65 in column 6 need to be considered in context with the entire disclosure of Macks. It is clear that Macks is stating that the ring is not radially fixed. The ring has to be allowed to move radially to a degree to account for shaft movement and maintain the clearance. This is also similar to the function of Applicant's. However, Macks is also clear to state that the rods are "flexible." A flexible material has an inherent resistance.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alison K. Pickard whose telephone number is 571-272-7062. The examiner can normally be reached on M-F (10-7:30), with alternate Friday's off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tricia Engle can be reached on 571-272-6660. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alison K. Pickard
Primary Examiner
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